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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,365	09/29/2003	Michael A. Frenkel	584-28417-US	5219

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EXAMINER	
LE, TOAN M	

ART UNIT	PAPER NUMBER
2863	

DATE MAILED: 12/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/674,365	FRENKEL ET AL.	
	Examiner	Art Unit	
	Toan M Le	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6-13 and 17-29* is/are rejected.

7)☒ Claim(s) *4,5,14-16 and 30* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 May 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claims 1-3, 5, 13, 15, 17-19, 25, and 30 are objected to because of the following informalities:

Referring to claim 1, line 7, "," should read -;-.

As to claim 2, line 2, "a" (first occurrence) should be deleted; line 3, "and," should read -and-.

Referring to claims 3, 5, 15, and 19, line 2, "and," should read -and-.

As to claims 13 and 25, line 6, "," should read -;-.

Referring to claim 18, line 3, "and," should read -and-.

As to claims 17-18, line 1, "14" should read -13-.

Referring to claim 30, lines 1-2, "the system of claim 25 further comprising an additional instrument for determining a parameter of instrument of said earth formation", it is not clearly pointing out what is the parameter of instrument of the earth formation.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhang et al. (U.S. Patent No. 6,502,036).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Referring to claim 1, Zhang et al. disclose a method of determining a parameter of interest of an earth formation using a tool conveyed in a borehole in the earth formation, the method comprising:

(a) obtaining measurements indicative of said parameter of interest with a first resistivity measuring instrument responsive to a property of the earth formation proximate to the borehole (near zone) (col., 10, lines 42-46);

(b) determining from said measurements a first model comprising a property of said near zone (col. 10, lines 51-57);

(c) obtaining multicomponent measurements indicative of a vertical resistivity of said earth formation (col. 10, lines 42-50); and

(d) determining from said first model and said multicomponent measurements said parameter of interest (col. 10, lines 58-60).

As to claim 2, Zhang et al. disclose a method of determining a parameter of interest of an earth formation using a tool conveyed in a borehole in the earth formation wherein said property

of said first model comprises at least one of (i) thicknesses of a plurality of layers, (ii) a length and resistivity of an invaded zone corresponding to said plurality of layers, and, (iii) horizontal resistivities of said earth formation outside said invaded zone (col. 5, lines 4-21; col. 10, lines 51-57).

Referring to claim 3, Zhang et al. disclose a method of determining a parameter of interest of an earth formation using a tool conveyed in a borehole in the earth formation wherein said parameter of interest comprises at least one of (i) a vertical resistivity of said earth formation, and, (ii) an anisotropy factor for said earth formation (col. 5, lines 51-52).

As to claim 6, Zhang et al. disclose a method of determining a parameter of interest of an earth formation using a tool conveyed in a borehole in the earth formation wherein determining said first model comprises performing an inversion of measurements made by said first instrument (col. 5, lines 43-46).

Referring to claim 7, Zhang et al. disclose a method of determining a parameter of interest of an earth formation using a tool conveyed in a borehole in the earth formation wherein determining said parameter of interest further comprises performing an inversion of said multicomponent measurements wherein said thicknesses of said layers, and said length and resistivity corresponding to each of said plurality of layers are fixed in said inversion (col. 6, lines 38-61).

As to claim 8, Zhang et al. disclose a method of determining a parameter of interest of an earth formation using a tool conveyed in a borehole in the earth formation wherein performing said inversion further comprises defining a global objective function that is the sum of a data objective function and a model objective function (col. 11, lines 1-5).

Referring to claim 9, Zhang et al. disclose a method of determining a parameter of interest of an earth formation using a tool conveyed in a borehole in the earth formation wherein performing said inversion further comprises using a rapid inversion algorithm (col. 5, lines 44-50).

Referring to claim 10, Zhang et al. disclose a method of determining a parameter of interest of an earth formation using a tool conveyed in a borehole in the earth formation wherein said rapid inversion is performed substantially at the well site (col. 4, lines 46-58).

As to claim 11, Zhang et al. disclose a method of determining a parameter of interest of an earth formation using a tool conveyed in a borehole in the earth formation wherein said multicomponent measurements comprise measurements made at a plurality of frequencies (col. 5, lines 55-57; col. 9, lines 8-12).

Referring to claim 12, Zhang et al. disclose a method of determining a parameter of interest of an earth formation using a tool conveyed in a borehole in the earth formation wherein said multicomponent measurements comprise measurements made at two frequencies (col. 5, lines 55-57; col. 9, lines 8-12).

As to claim 13, Zhang et al. disclose a method incorporated into an apparatus for use in a borehole in an earth formation for determining a parameter of interest of the earth formation, the apparatus comprising:

(a) a first resistivity measuring instrument responsive to a property of the earth formation proximate to the borehole (near zone) (col. 10, lines 42-46);

(b) a processor 12 (figure1) for determining from said measurements made by said first instrument a first model comprising properties of said near zone (col. 4, lines 46-52; col. 5, lines 30-35; col. 10, lines 51-57);

(c) a second resistivity measuring instrument for obtaining measurements indicative of a vertical resistivity of said earth formation (col. 10, lines 42-50); and

(d) a processor for determining said parameter of interest from said first model and said measurements mad by said second instrument (col. 10, lines 58-60).

Referring to claim 17, Zhang et al. disclose a method incorporated into an apparatus for use in a borehole in an earth formation for determining a parameter of interest of the earth formation wherein said second instrument comprises an induction device having a plurality of transmitter-receiver combinations, wherein at least one transmitter or at least one receiver comprises an antenna with an axis inclined to an axis of the second instrument (figure 2).

As to claim 18, Zhang et al. disclose a method incorporated into an apparatus for use in a borehole in an earth formation for determining a parameter of interest of the earth formation wherein said model further comprises (i) thicknesses of a plurality of layers, (ii) a length and resistivity of an invaded zone corresponding to said plurality of layers, and (iii) a horizontal resistivity of said earth formation outside said invaded zone (col. 5, lines 4-21; col. 10, lines 51-57).

Referring to claim 19, Zhang et al. disclose a method incorporated into an apparatus for use in a borehole in an earth formation for determining a parameter of interest of the earth formation wherein said parameter of interest comprises at least one of (i) a vertical resistivity of said earth formation, and (ii) an anisotropy factor for said earth formation (col. 5, lines 51-52).

As to claim 20, Zhang et al. disclose a method incorporated into an apparatus for use in a borehole in an earth formation for determining a parameter of interest of the earth formation wherein determining said first model comprises performing an inversion of measurements made by said first instrument (col. 5, lines 43-46).

Referring to claim 21, Zhang et al. disclose a method incorporated into an apparatus for use in a borehole in an earth formation for determining a parameter of interest of the earth formation wherein determining said parameter of interest further comprises performing an inversion of said measurements made by said second instrument wherein said thicknesses of said layers, and said length and resistivity corresponding to each of said plurality of layers are fixed in said inversion (col. 6, lines 38-61).

As to claim 22, Zhang et al. disclose a method incorporated into an apparatus for use in a borehole in an earth formation for determining a parameter of interest of the earth formation wherein said processor in (d) performs said inversion substantially at the well site (col. 4, lines 46-58).

Referring to claim 23, Zhang et al. disclose a method incorporated into an apparatus for use in a borehole in an earth formation for determining a parameter of interest of the earth formation wherein at least one of said processor in (b) and said processor in (d) is at a surface location (col. 4, lines 46-58).

As to claim 24, Zhang et al. disclose a method incorporated into an apparatus for use in a borehole in an earth formation for determining a parameter of interest of the earth formation wherein at least one of said processor in (b) and said processor in (d) is at a downhole location (col. 4, lines 46-58).

Referring to claim 25, Zhang et al. disclose a method incorporated into a system for estimating a parameter of interest of an earth formation penetrated by a borehole, the system comprising:

(a) a first resistivity measuring instrument responsive to a property of the earth formation proximate to the borehole (near zone) (col. 10, lines 42-46);

(b) a processor 12 (figure 1) for determining from said measurements made by said first instrument a first model comprising properties of said near zone (col. 4, lines 46-52; col. 5, lines 30-35; col. 10, lines 51-57);

(c) a second resistivity measuring instrument for obtaining measurements indicative of a vertical resistivity of said earth formation (col. 10, lines 42-50);

(d) a processor for determining said parameter of interest from said first model and said measurements mad by said second instrument (col. 10, lines 58-60); and

(e) a conveyance device for conveying said first and second instruments into said borehole (figure 1).

As to claims 26-28, Zhang et al. disclose a method incorporated into a system for estimating a parameter of interest of an earth formation penetrated by a borehole wherein said conveyance device comprises a wireline, coiled tubing, drilling tubular (col. 11, lines 6-8).

Referring to claim 29, Zhang et al. disclose a method incorporated into a system for estimating a parameter of interest of an earth formation penetrated by a borehole wherein said second instrument comprises an induction device having a plurality of transmitter-receiver combinations, wherein at least on transmitter or at least one receiver comprises an antenna with an axis inclined to an axis of the second instrument (figure 1).

Claims 4-5 and 14-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 6,643,589 to Zhang et al. U.S. Patent No. 6,308,136 to Tabarovsky et al.

U.S. Patent No. 6,381,542 to Zhang et al. U.S. Patent No. 6,810,331 to Bittar et al.

U.S. Patent No. 6,044,325 to Chakravarthy et al.

U.S. Patent No. 5,883,515 to Strack et al. U.S. Patent No. 6,832,159 to Smits et al.

U.S. Patent No. 6,618,676 to Kriegshauser et al.

U.S. Patent No. 5,862,513 to Mezzatesta et al. U.S. Patent No. 6,760,666 to Hagiwara

U.S. Patent No. 6,636,045 to Tabarovsky et al.

U.S. Patent No. 6,574,562 to Tabarovsky et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan M Le whose telephone number is (571) 272-2276. The examiner can normally be reached on Monday through Friday from 9:00 A.M. to 5:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Toan Le

December 15, 2004

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